Continuous control of microring weight banks

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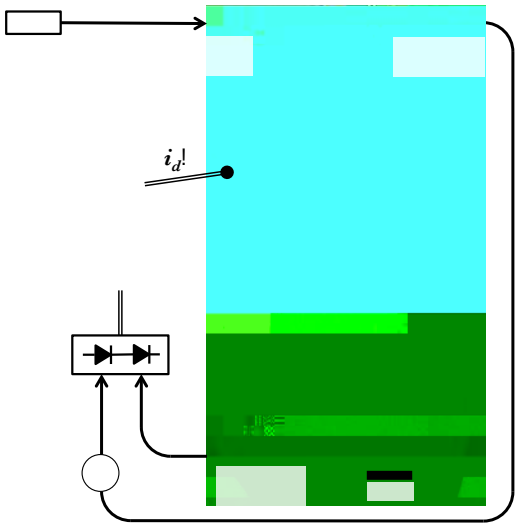
Abstract **onstr t ont n o s r n o o p n t r ts n n o s on ron n s Cont n o s on r t t on s n t on or t r t n o s n pro ss n n o n s n o n t or n ppro s n s on p oton s**

The rapid development of CMOS-compatible photonic interconnect technologies has inadvertently opened a door for unconventional circuit and system opportunities in optics. At the same time, microelectronic fields have recently renewed investigation of non-von Neumann architectures, in part, due to incipient limitations in aspects of Moore's law. In what is considered the 3rd generation of "neuromorphic" architectures, most approaches incorporate time-resolved dynamics, loosely classified as "spiking," in addition to decentralizing processing – a move that intimately intertwines interconnection with computing. Photonics device research has followed suit with a recent bloom of proposed forms of spiking dynamics [1]; however, few suitable optical interconnects have been proposed. In the past, neural networking ideas implemented in holograms have failed to outperform mainstream electronics at relevant problems in computing, which can largely be attributed to their incompatibility with mainstream integration technologies.

A recent proposal for wavelength-division multiplexed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